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Peng Yin

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EXAMINER

THOMPSON, JAMES A

ART UNIT

PAPER NUMBER

2625

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,567	<b>Applicant(s)</b> YIN ET AL.	
	<b>Examiner</b> James A. Thompson	<b>Art Unit</b> 2625	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 September 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 27 September 2010 have been fully considered but they are not persuasive.

#### **Regarding page 10, lines 9-25:**

*Applicant argues* that claims 1 and 37 have been amended to recite that the method is performed in a video encoder, and are therefore now allegedly statutory. Applicant further states that claims 1 and 37 are allegedly statutory since they are now tied to an apparatus.

*Examiner replies* that the “machine-or-transformation” test, though not the only test that can be used to determine if a claim is statutory, requires that a process either be (1) tied to a particular machine or (2) transform underlying subject matter. Nominally reciting that the method occurs in a video encoder does not *tie* the method to a *particular* machine. In fact, on page 6, line 12 to page 7, line 9 of the present specification, Applicant discusses a wide variety of embodiments of the video encoder. These embodiments include software stored on a computer disk, manual processing, software stored in ROM, digital signal processing hardware, and so on. Thus, the method is not tied to a particular machine. Further, some of these embodiments, such as software, are not statutory machines. Therefore, Applicant's amendments to claims 1 and 37 do not overcome the previous rejection under 35 U.S.C. § 101.

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**Regarding page 10, line 26 to page 11, line 25:**

*Applicant argues* that the video encoder recited in claim 13 necessarily involves the use of hardware, and is thus either statutory for that reason or at the very least due to being tied to a particular machine.

*Examiner replies* firstly that the “machine-or-transformation” test is only used to determine if a process is statutory, and is not used to determine if non-process claims are statutory. Secondly, as discussed above, Applicant defines a wide variety of embodiments for the video encoder. These embodiments include software *per se*, which is non-statutory. See MPEP § 2106.01(I). The embodiments also include *manual operations*, which are non-statutory. Thus, the claimed “video encoder” is not limited to a statutory machine, but encompasses many non-statutory embodiments.

Further, even though the software is stored in the RAM hardware, as Applicant states, and the RAM must interact with processing devices, it is not the RAM hardware or the processing devices which are claimed. Rather, one of the embodiments of the "video encoder" is the software itself. Further, even if one were to argue that the software itself must be physical, since while stored in RAM the software must be composed of electrical charges activated in the RAM, such an embodiment would constitute a transitory signal, which is also considered a non-statutory embodiment. Therefore, Applicant's amendments to claim 13 do not overcome the previous rejection under 35 U.S.C. § 101.

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**Regarding page 11, line 26 to page 12, line 11:**

*Applicant argues* that claim 25, which has been amended to read a “computer-readable non-transitory medium” rather than a “digital videodisc” allegedly places claim 25 within one of the statutory classes of invention.

*Examiner replies* that a digital videodisc is also a computer-readable non-transitory medium. Applicant has merely broadened the scope of claim 25, but has not addressed the rejection of claim 25 under 35 U.S.C. § 101. Claim 25 is non-statutory because it merely recites data on a disk. Mere data on a computer disk, such as a digital videodisc, is non-statutory since it is merely a computer disk storing non-functional descriptive material, such as a movie. Non-functional descriptive material, no matter medium the material is stored on, is non-statutory. See MPEP § 2106.01(II).

**Regarding page 12, lines 12-18:** For the reasons set forth above, claims 1-37 remain rejected under 35 U.S.C. § 101.

**Regarding page 12, lines 19-29:**

*Applicant argues* that Examiner has contradicted himself by stating that only one step or element of certain claims are required, and later stating that only one step or element is insufficient.

*Examiner replies* that there is no contradiction. As Applicant admits, only step or element is required by Applicant’s specifically recited claim language. Therefore, *as a result of Applicant’s recited language*, the claims in question are not enabled by the specification.

**Regarding page 13, lines 1-22:** Examiner agrees with Applicant's arguments regarding the rejections under 35 U.S.C. § 112, first paragraph. Accordingly, the rejections under 35 U.S.C. § 112, first paragraph have been withdrawn.

**Regarding page 13, line 23 to page 14, line 2:**

*Applicant argues* that claims 25-36 are unambiguously directed to a computer-readable non-transitory medium.

*Examiner replies* that the actual body of claim 25 recites a series of method steps used to generate the signal to be stored on the medium, rather than the elements of an article of manufacture. Thus, Applicant is claiming the method in the body of the claim, even though the preamble is directed to the computer-readable non-transitory medium. Thus, it is unclear whether claims 25-36 are meant to encompass the medium or the method.

**Regarding page 14, line 3 to page 16, line 11:**

*Applicant argues* that Wang (US-2003/0099292) does not teach all of the limitations of claims 1, 13, 25 or 37.

*Examiner replies* that, in order to anticipate claim 1, Wang does not have to teach each and every step listed in the body of claim 1 since the preamble of claim 1 clearly states (and as Applicant also admits) that the method comprises *at least one* of the steps. Thus, to anticipate claim 1, Wang merely needs to teach one of the steps recited in the body of the claim. Likewise, Wang needs only anticipate one element listed in the body of claim 13, and one step listed in the

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body of claim 25 in order to anticipate the corresponding claim. Claim 37 is the only claim wherein all of the recited steps are required to anticipate the claim.

In this section of Applicant's arguments, patentability has been merely asserted. Thus, Examiner will address Applicant's arguments in other sections.

**Regarding page 16, line 13 to page 18, line 13:**

*Applicant argues* that paragraphs 57 and 76 Wang allegedly do not teach the first recited step of claim 1.

*Examiner replies* that paragraph 57 of Wang demonstrates that subsets of macroblocks within a frame can be encoded in either field or frame mode. Paragraph 76 of Wang describes that the motion vector of the current block, and whether the motion vector is a frame or field motion vector, is determined. The mode of the subset of macroblocks is the selected based on the mode of the current block, the mode of the neighboring block, and either the field-based or frame-based motion vector of the neighboring block. This is further brought out by paragraphs 77-81 of Wang, which describe the macroblock mode selection in greater detail. Thus, the first step of claim 1 is taught by Wang, and claims 1, 13 and 25 are therefore fully anticipated by Wang.

**Regarding page 18, line 14 to page 19, line 11:**

*Applicant argues* that Wang does not teach the second recited step of claim 1.

*Examiner replies* that, as discussed above, paragraphs 76-81 of Wang describes that the mode of the subset of macroblocks is the selected based on the mode of the current block, the

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mode of the neighboring block, and either the field-based or frame-based motion vector of the neighboring block. Thus, the macroblock mode of at least one neighboring macroblock is checked and the mode for the current macroblock is selected in response to the macroblock mode of the at least one checked neighboring macroblock. Thus, for a second reason, Wang fully anticipates claims 1, 13 and 25.

**Regarding page 19, line 12 to page 20, line 7:**

*Applicant argues* that the third and fourth steps of claim 1 are not taught by Wang.

*Examiner replies* that, firstly, Examiner agrees that steps three and four are not taught by Wang. However, as discussed in detail above, the claim language only requires that one of the four listed steps be taught in order for the claim to be fully anticipated. Wang teaches two of the steps, and therefore fully anticipates claims 1, 13 and 25.

**Regarding page 20, line 8 to page 22, line 11:**

*Applicant argues* that Wang does not teach “selecting a subset of macroblocks for encoding,” as recited in claim 37.

*Examiner replies* that paragraph 58, line 1 to paragraph 59, line 4 of Wang discloses that a macroblock can be selected for encoding and further split into smaller blocks. Additionally, paragraph 57 of Wang discloses that the method can be performed on groups of macroblocks. So, even if a single macroblock were not considered a subset, Wang does disclose that multiple macroblocks can be selected as a subset of macroblocks for encoding.



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*Applicant argues* that none of claims 1, 13, 25 and 37 are fully taught by Wang or any obvious combination of the cited prior art.

*Examiner replies* that Examiner has demonstrated that all of claims 1, 13, 25 and 37 are fully anticipated by Wang.

**Regarding page 22, line 12 to page 23, line 2:** In conclusion, claims 1, 13, 25 and 37 are fully anticipated by Wang. Further, the rejections under 35 U.S.C. § 101 and 35 U.S.C. § 112, second paragraph are maintained. The rejections under 35 U.S.C. § 112, first paragraph have been withdrawn. Since the grounds of rejection are maintained, **the present action is made final.**

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**3. Claims 1-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Independent claim 1 recites a video encoding method. However, the steps performed are all internal algorithmic computations. There is no form of output or input. There is no concrete, tangible and useful result. Further, the method is not tied to any particular machine, nor does the method transform any underlying subject matter. The recited method is merely a computational algorithm. Mere algorithms are within any of the statutory classes of invention, and are thus not patentable.

Further, even though the method is now recited as being in a video encoder, the method is still non-statutory. On page 6, line 12 to page 7, line 9 of the present specification, Applicant discusses a wide variety of embodiments of the video encoder. These embodiments include software stored on a computer disk, manual processing, software stored in ROM, digital signal processing hardware, and so on. Thus, the method is not tied to a particular machine, nor does the method transform underlying subject matter. Further, some of these embodiments, such as software, are not statutory machines. Therefore, claim 1 is non-statutory.

Claims 2-12 depend from claim 1. Further, none of claims 2-12 further limit claim 1 so as to place the corresponding dependent claim into a statutory class of invention. Thus, claims 2-12 are also each rejected as being non-statutory subject matter.

Independent claim 13 recites a video encoder. The video encoder can be embodied as software *per se*, or even as manual operations performed by a human being. On page 6, lines 24-34 of Applicant's specification, Applicant describes that manual human operations are within the scope of the encoder, as well as software stored in transient media, such as RAM, and the operation of program logic. Thus, claim 13 encompasses not only statutory subject matter, such as hardware or a computer-executable program stored on a computer-readable medium, but also non-statutory subject matter.

Claims 14-24 depend from claim 13. Further, none of claims 14-24 further limit claim 13 so as to place the corresponding dependent claim into a statutory class of invention. Thus, claims 14-24 are also each rejected as being non-statutory subject matter.

Independent claim 25 recites a computer-readable non-transitory medium encoded with signal data. However the signal data was produced, whether through a statutory or a non-

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statutory process, mere data on a computer medium does not fall within a statutory class of invention.

Claims 26-36 depend from claim 25. Further, none of claims 26-36 further limit claim 25 so as to place the corresponding dependent claim into a statutory class of invention. Thus, claims 26-36 are also each rejected as being non-statutory subject matter.

Independent claim 37 recites a video encoding method. However, the steps performed are all internal algorithmic computations. There is no form of output or input. There is no concrete, tangible and useful result. Further, the method is not tied to any particular machine, nor does the method transform any underlying subject matter. The recited method is merely a computational algorithm. Mere algorithms are within any of the statutory classes of invention, and are thus not patentable.

Further, even though the method is now recited as being in a video encoder, the method is still non-statutory. On page 6, line 12 to page 7, line 9 of the present specification, Applicant discusses a wide variety of embodiments of the video encoder. These embodiments include software stored on a computer disk, manual processing, software stored in ROM, digital signal processing hardware, and so on. Thus, the method is not tied to a particular machine, nor does the method transform underlying subject matter. Further, some of these embodiments, such as software, are not statutory machines. Therefore, claim 37 is non-statutory.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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**5. Claims 25-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 25 is directed to “a computer-readable non-transitory medium encoded with signal data comprising a plurality of block transform coefficients” but then recites that the signal data results from at least one of a series of recited method steps. Thus, it is not clear what is meant to be claimed by the recited language. Is claim 25 intended to be a method? If so, then method language should be used in the preamble. Is claim 25 intended to be signal data? If so, then elements of the data should be recited, although, as discussed above, a mere collection of data is non-statutory. Since it is not clear what is meant to be covered by the recited language of claim 25, Applicant has failed to particularly out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 26-36 depend from claim 25, and are therefore rejected on the same grounds.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

**7. Claims 1-4, 7-10, 12-16, 19-22, 24-28, 31-34, 36 and 37 are rejected under 35 U.S.C. 102(a) as being anticipated by Wang (US-2003/0099292).**

**Regarding claims 1, 13 and 25:** Wang discloses, in a video encoder, a video encoding method for selecting the mode of a current macroblock of an inter-coded frame (para. 9, lines 1-4 and para. 11 of Wang), the method comprising at least one of: checking first modes for a subset of macroblock modes (para. 57 of Wang – *macroblocks each separately encoded in field or frame mode depending upon macroblock characteristics*), selectively checking other modes in response to motion vector information of the checked first modes, and selecting the mode for the current macroblock in response to the checked modes (para. 76 of Wang – *motion vector of the current block are determined and the mode selected based on the mode of the current block, the mode of the neighboring block, and either the field-based or frame-based motion vector of the neighboring block*); checking the macroblock mode of at least one neighboring macroblock, and selecting the mode for the current macroblock in response to the macroblock mode of the at least one checked neighboring macroblock (para. 78-81 of Wang – *field-based and frame-based motion vectors are determined and the mode selected for the current block based on the mode of the current block, the mode of the neighboring block, and either the field-based or frame-based motion vector of the neighboring block*); checking the cost of a subset of macroblock modes, further checking only intra-coded modes if the checked cost meets a preset criteria, and selecting the mode for the current macroblock in response to the checked modes; and adjusting an early-stopping threshold in response to checked macroblock modes, and selecting the mode for the current macroblock in response to the checked macroblock modes if the adjusted early-stopping threshold is met (*at least one of the steps is taught by Wang, thus claim 1 as recited is anticipated by Wang*).

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Further regarding claim 13: The method of claim 1 is implemented by a video encoder (para. 39, lines 14-18 of Wang).

Further regarding claim 25: The method of claim 1 is used to produce a computer-readable non-transitory medium encoded with signal data comprising a plurality of block transform coefficients (para. 2 of Wang).

**Regarding claims 2, 14 and 26:** Wang discloses checking first modes for a subset of macroblock modes, selectively checking other modes in response to motion vector information of the checked first modes, and selecting the mode for the current macroblock in response to the checked modes (para. 94-95 of Wang – *macroblock mode determined based on different directional motion vectors for the different possible modes*).

**Regarding claims 3, 15 and 27:** Wang discloses that said first modes comprise the quadratic modes of SKIP (para. 97 of Wang), 16x16, 8x8, and 4x4 (figs. 3a-3f and para. 57-58 of Wang).

**Regarding claims 4, 16 and 28:** Wang discloses checking the macroblock mode of at least one neighboring macroblock, and selecting the mode for the current macroblock in response to the macroblock mode of the at least one checked neighboring macroblock (para. 78-81 of Wang – *field-based and frame-based motion vectors are determined and the mode selected for the current block based on the mode of the current block, the mode of the neighboring block, and either the field-based or frame-based motion vector of the neighboring block*).

**Regarding claims 7, 19 and 31:** Wang discloses initially performing motion estimation only for a subset of the possible block sizes; and using the motion information to determine if other motion estimation or complexity measures should be performed for other block sizes (para.

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58 and para. 60, line 1 to para. 61, line 10 of Wang – *Motion information is used for a single macroblock to determine if frame or field encoding is to be performed. The other possible blocks sizes are then decided upon based on the determination of frame or field mode.*).

**Regarding claims 8, 20 and 32:** Wang discloses that said first modes are checked first and their motion information is used to decide if other modes needs to be checked (para. 58 and para. 60 of Wang – *other modes to be checked is determined based on the result of checking for frame or field mode*).

**Regarding claims 9, 21 and 33:** Wang discloses that spatial/temporal neighboring macroblock and block partition information is used to decide the subset of possible block sizes or inter/intra modes that need to be checked (para. 60, line 1 to para. 61, line 10 and para. 65, lines 1-5 of Wang).

**Regarding claims 10, 22 and 34:** Wang discloses initially performing mode checking for a subset of both inter modes and intra modes; calculating a complexity measure responsive to the mode checking; and using the complexity measure to determine if other inter modes and intra modes should be performed (para. 58 and para. 60, line 1 to para. 61, line 10 of Wang – *Motion information is used for a single macroblock to determine if frame or field encoding is to be performed [and thus either intra mode or intra mode]. The other possible blocks sizes [and thus possible macroblock modes] are then decided upon based on the determination of frame or field mode.*).

**Regarding claims 12, 24 and 36:** Wang discloses that early termination takes place if spatially or/and temporally neighboring macroblocks have a specific relationship with the motion

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information of the current macroblock after examining a specific mode (para. 96 of Wang – *if spatial and temporal motion vectors are determined to be too small, the macroblock is skipped*).

**Regarding claim 37:** Wang discloses, in a video encoder, a video encoding method for selecting the encoding mode of a macroblock of an inter-coded frame (para. 9, lines 1-4 and para. 11 of Wang), the method comprising: selecting a subset of macroblock modes for encoding (para. 58, line 1 to para. 59, line 4 of Wang); comparing said subset of macroblock modes for coding efficiency (para. 60, line 1 to para. 61, line 10 of Wang – *Motion information is used for a single macroblock to determine if frame or field encoding is to be performed. The other possible blocks sizes are then decided upon based on the determination of frame or field mode.*); and selecting a mode having favorable coding efficiency, responsive to said step of comparing modes (para. 62, line 1 to para. 63, line 5 of Wang – *Macroblock size is determined based on the efficiency of using a particular macroblock size responsive to the determination of whether to use field or frame encoding.*).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 5, 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US-2003/0099292) in view of Horowitz (US-2003/0161402).**



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**Regarding claims 5, 17 and 29:** Wang does not disclose expressly checking the cost of a subset of macroblock modes, further checking only intra-coded modes if the checked cost meets a preset criteria, and selecting the mode for the current macroblock in response to the checked modes.

Horowitz discloses checking the cost of a subset of macroblocks, further checking only intra-coded modes if the checked cost meets a preset criteria, and selecting the mode for the current macroblock in response to the checked modes (para. 17 of Horowitz – *Each macroblock is checked to see if the motion estimate exceeds a wake value. If so, intra-coding is performed on the corresponding macroblock. If not, the corresponding macroblock is skipped.*).

Wang and Horowitz are analogous art because they are from the same field of endeavor, namely video encoding using macroblocks and mode selection. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to check the cost of a subset of macroblocks, further checking only intra-coded modes if the checked cost meets a preset criteria, and selecting the mode for the current macroblock in response to the checked modes, as taught by Horowitz. Since Wang, as discussed above in the rejection of claim 1, uses different macroblock sizes and modes, then by combination a subset of macroblock modes would be checked. The motivation for doing so would have been to more efficiently process the intra-coded frames of the video by skipping the macroblocks which do not have sufficient motion, and are therefore redundant. Therefore, it would have been obvious to combine Horowitz with Wang to obtain the invention as specified in claims 5, 17 and 29.

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**10. Claims 6, 11, 18, 23, 30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US-2003/0099292) in view of Kim (US-2002/0196854).**

**Regarding claims 6, 18 and 30:** Wang does not disclose expressly adjusting an early-stopping threshold in response to checked macroblock modes, and selecting the mode for the current macroblock in response to the checked macroblock modes if the adjusted early-stopping threshold is met.

Kim discloses adjusting an early-stopping threshold in response to checked macroblock modes (para. 29, lines 1-8 of Kim – *computed encoder parameters determine range of search for high-level motion estimation, and thus correspond to the threshold*), and selecting the mode for the current macroblock in response to the checked macroblock modes if the adjusted early-stopping threshold is met (para. 29, lines 5-12 of Kim – *mode selected if encoder parameters satisfied*).

Wang and Kim are analogous art because they are from the same field of endeavor, namely video encoding using macroblocks and mode selection. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use threshold parameters to determine how to efficiently compute modes, as taught by Kim. The motivation for doing so would have been to improve encoding performance and reduce encoding/decoding computations times. Therefore, it would have been obvious to combine Kim with Wang to obtain the invention as specified in claims 6, 18 and 30.

**Regarding claims 11, 23 and 35:** Wang does not disclose expressly that the early stop criteria are based on adaptive thresholding to stop checking other inter or intra modes.

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Kim discloses that the early stop criteria are based on adaptive thresholding to stop checking other inter or intra modes (para. 29 of Kim – *encoder parameters are produced based on an analysis of macroblocks in the down-sampled domain, and are thus adaptive; encoder parameters used to determine mode if macroblock is within the search range*).

Wang and Kim are analogous art because they are from the same field of endeavor, namely video encoding using macroblocks and mode selection. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to base the early stop criteria on adaptive thresholding to stop checking other inter or intra modes, as taught by Kim. The motivation for doing so would have been to improve encoding performance and reduce encoding/decoding computations times. Therefore, it would have been obvious to combine Kim with Wang to obtain the invention as specified in claims 11, 23 and 35.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is (571)272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on 571-272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James A Thompson/  
Primary Examiner, Art Unit 2625

30 September 2010